I. C. 6648 SEPTEMBER, 1932

DEPARTMENT OF COMMERCE

UNITED STATES BUREAU OF MINES
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INFORMATION CIRCULAR

SURVEY OF CRACKING PLANTS JANUARY 1, 1932

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I.C. 6648
September, 1932.

INFORMATION CIRCULAR

DEPARTMENT OF COMMERCE - BUREAU OF MINES

SURVEY OF CRACKING PLANTS, JANUARY 1, 1932[1]

By G. R. Hopkins[2]

Introduction

The total daily charging capacity of the cracking plants in the United States as of January 1, 1932, amounted to the record total of 2,046,981 barrels. This represents an increase over the previous year of 96,200 barrels, or 5 per cent. Although the increase in total charging capacity of the cracking plants during 1931 was considerably less than in 1930, it was about three times the increase in the capacity for straight distillation.[3]

The total daily charging capacity of the plants operating on January 1, 1932, amounted to 1,603,809 barrels, or 78 per cent of the total; the capacity of the inoperative plants was 394,585 barrels, or 19 per cent; that of the plants under construction was 48,587 barrels, or 3 per cent. Compared with a year ago, these data represent a small increase in operative capacity, a large gain in inoperative capacity, and a large decrease in the capacity under construction. The refinery survey showed a comparable increase in the inoperative capacity of the equipment used for straight distillation, but showed a decrease in operative capacity and a much larger relative decline in the capacity under construction. These facts indicate an expansion in cracking at the expense of skimming.

In cracking, as in practically all industrial operations, capacity may be increased either by constructing new units or by remodeling existing equipment. Until five years ago most of the capacity that was added consisted of new equipment, but the last few years have witnessed a tendency to increase the potential throughput by modernizing existing units. It is estimated that at least 125,000 barrels of daily cracking capacity was added through remodeling in 1931, compared with about 150,000 barrels added through the construction of new equipment. On the other hand, the cracking capacity is also reduced in two ways, by the dismantling of old units and through obsolescence. It is estimated that about 110,000 barrels of capacity was dismantled in 1931 and that about 70,000 barrels was lost through obsolescence.

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1 The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from U. S. Bureau of Mines Information Circular 6648."

2 Economic analyst, U. S. Bureau of Mines.

3 Hopkins, G. R., and Cochrane, E. W., Petroleum Refineries in the United States, January 1, 1932: Bureau of Mines Information Circular 6641.

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The number of cracking units as of January 1, 1932, totaled 1,348, compared with 1,868 a year ago. This material decline resulted chiefly from the dismantling of a large number of Burton stills of small average capacity. The number of units has shown a steady decrease in recent years, the total capacity a steady increase. This trend is indicative of the tendency of refiners to replace small, obsolete units by one or two large modern units. For example, the average size of the cracking units on June 1, 1925, the date of the first cracking survey, was 330 barrels; on January 1, 1932, it was approximately 1,500 barrels.

Texas continued to rank far ahead of the other States in total capacity of cracking plants; California was second, Indiana third. The total capacity of the cracking plants in Texas, which are largely concentrated on the Gulf coast, amounted to 645,720 barrels, or 32 per cent of the total for the United States. In a number of States the capacity of the plants dismantled in 1931 exceeded the increase due to new construction or to the remodeling of old units. Wyoming showed the largest decrease in capacity during 1931; Oklahoma showed a decline for the second successive year.

Thirty-seven different types of cracking processes were reported in this survey compared with 35 a year ago and with 27 in 1925. Approximately half of the number of types listed in 1925 were reported in the 1932 survey, from which it may be assumed that about two dozen new types have been developed in the intervening seven years. The number of processes showed the most rapid increase in 1928; since then the number of new processes developed has about equaled the number no longer reported. The various types of cracking processes may be divided into two general classes, one comprising those which have been actively licensed, the other made up of those that have been used exclusively by the respective companies which designed them. For purposes of designation, these groups will be referred to as the "license" and "own" groups. At the time of the bureau's first survey (1925) the license group was of primary importance, but the last few years have witnesses a rapid increase in the capacity of the "own" group. For example, between January 1, 1931, and January 1, 1932, the total capacity of the "own" group rose from about 930,000 barrels to 1,060,000 barrels; the total capacity of the license group declined from about 1,020,000 barrels to 990,000 barrels in the same period.

Cracking processes may be further divided into those which operate in the liquid phase and those which operate in the vapor phase. Liquid-phase processes were the first to be developed. The development of vapor-phase units was given an impetus by the discovery that the gasoline produced by them had an unusually high antiknock rating. Thus the total capacity of the vapor-phase units practically doubled between January 1, 1930, and January 1, 1932. However it should be noted that the total daily capacity as of January 1, 1932 (60,350 barrels), represented only about 3 per cent of the total.

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The production of gasoline by cracking has shown a steady increase in recent years; in 1931, the output of cracked gasoline totaled 176,181,000 barrels, an increase of 7 per cent over 1930. As the output of all grades of gasoline at refineries showed a small decrease in 1931, it follows that the proportion of cracked gasoline to the total increased materially. It might be assumed that, in times of low crude prices such as prevailed in 1931, the skimming of crude oil would be preferable to cracking. Actually the reverse held true; that is, cracking increased materially and skimming declined. At some refineries all the skimming units were shut down for months at a time and only the cracking plants operated. In some cases this was due to a restriction in the supply of crude oil, but in general it was a tribute to the increased efficiency of cracking plants.

Data as to the gasoline yields obtained by cracking vary widely depending upon the type of process, the charging stock, and the extent of recycling. In 1925 the average gasoline yield reported by all the companies was 33 per cent of the charging stock. In 1931 an analysis of the reports of about 25 large companies showed a yield of 45 per cent, indicating a material improvement in efficiency.

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RECAPITULATION BY YEARS

Year	Total units	Charging capacity, barrels per day			
		Operating	Shut down	Building	Total
June 1, 1925	2,527	690,492	26,200	116,000	832,692
June 1, 1926	2,559	844,800	47,690	47,600	940,090
Jan. 1, 1928	2,334	1,013,000	253,000	22,000	1,288,000
Jan. 1, 1929	2,205	1,194,501	147,923	134,450	1,476,874
Jan. 1, 1930	2,002	1,419,200	139,840	149,900	1,708,940
Jan. 1, 1931	1,868	1,594,990	244,661	111,130	1,950,781
Jan. 1, 1932	1,348	1,603,809	394,585	48,587	2,046,981

RECAPITULATION BY DISTRICTS (January 1, 1932)

District	Total units	Charging capacity, barrels per day			
		Operating	Shut down	Building	Total
East Coast	170	255,000	78,800	7,040	340,840
Appalachian	60	56,450	10,700	- -	67,150
Ind., Ill., Ky., etc.	267	264,850	62,400	12,000	339,250
Okla., Kans., etc. .	264	199,200	48,800	15,000	263,000
Texas Inland	67	92,270	44,350	- -	136,620
Texas Gulf coast ...	180	417,000	88,100	4,000	509,100
Ark. and Inland La..	33	26,000	9,650	- -	35,650
La. Gulf coast	40	71,800	2,600	3,000	77,400
Rocky Mountain	189	36,289	29,985	7,547	73,821
California	78	184,950	19,200	- -	204,150
U. S. Total	1,348	1,603,809	394,585	48,587	2,046,981

RECAPITULATION BY STATES (January 1, 1932)

State	Total units	Charging capacity, barrels per day			
		Operating	Shut down	Building	Total
Alabama	1	- -	- -	3,000	3,000
Arkansas	21	10,500	6,250	- -	16,750
California	78	184,950	19,200	- -	204,150
Colorado	12	3,459	411	- -	3,870
Georgia	2	3,600	- -	- -	3,600
Illinois	112	75,700	21,900	- -	97,600
Indiana	129	132,050	40,500	12,000	184,550
Iowa	1	- -	1,000	- -	1,000
Kansas	91	79,500	30,050	12,500	122,050
Kentucky	8	10,000	- -	- -	10,000
Louisiana	51	87,300	6,000	- -	93,300
Maryland	22	24,200	15,200	- -	39,400
Massachusetts	16	22,300	8,000	- -	30,300
Michigan	3	3,750	- -	- -	3,750
Missouri	26	15,500	4,500	- -	20,000
Montana	4	2,800	2,000	- -	4,800
New Jersey	48	93,300	15,200	7,040	115,540
New York	14	19,600	- -	- -	19,600
Ohio	28	62,100	- -	- -	62,100
Oklahoma	146	104,200	13,250	2,500	119,950
Pennsylvania	94	116,250	32,700	- -	148,950
Rhode Island	3	6,000	- -	- -	6,000
South Carolina	8	- -	14,400	- -	14,400
Texas	247	509,270	132,450	4,000	645,720
Utah	33	6,400	3,800	1,000	11,200
West Virginia	10	7,450	4,000	- -	11,450
Wyoming	140	23,630	23,774	6,547	53,951
U. S. Total	1,348	1,603,809	394,585	48,587	2,046,981

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RECAPITULATION BY TYPE OF PROCESS

Type of process	January 1, 1932		January 1, 1931	
	Total units	Total capacity, barrels per day	Total units	Total capacity, barrels per day
Black	12	16,000	12	16,000
Burton	320	83,774	793	164,249
Carborundum	1	3,000	1	3,000
Coil cracker	-	-	2	8,000
Combination	1	12,000	-	-
Continuous high-pressure	3	10,947	2	5,300
Controlled coil	8	24,500	2	4,500
Convertor	1	4,800	1	4,200
Cross	151	241,370	150	245,800
de Florez	12	24,700	6	13,550
Doherty	21	29,000	20	27,500
Donnelly	3	5,500	4	7,000
Dubbs	173	261,950	185	252,250
Fleming	3	600	2	800
Gyro	21	20,400	20	16,000
Holmes-Manley	113	262,200	115	233,900
Isom	95	123,500	115	179,150
Jenkins	44	65,300	46	66,150
Leamon	5	2,500	5	2,250
Lewis	4	6,200	4	6,200
Lientz	1	6,000	1	6,000
Link	22	46,000	22	46,000
Louisiana coil	-	-	5	7,100
Ormont	4	1,000	4	1,000
Own	119	168,500	166	168,000
Pipe Stills	3	13,000	3	13,000
Pratt	2	2,500	2	2,500
Pressure-coke	11	19,000	13	22,000
Richmond	1	3,000	2	6,400
Rowsey	1	10,000	-	-
Sinclair Type 600	25	87,000	-	-
Skelly-Rittman vapor-phase	2	2,500	2	2,500
Slagter	15	2,250	18	2,700
Snodgrass	7	2,700	14	4,972
Solar	1	7,150	-	-
True vapor-phase	2	4,600	2	3,600
Trumble	1	750	1	750
Tube-and-tank	127	441,540	118	385,460
Vapor-phase	2	2,150	3	4,200
Winkler-Koch	11	29,100	7	18,800
Total	1,348	2,046,981	1,868	1,950,781

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SURVEY OF CRACKING PLANTS, JANUARY 1, 1932

Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	ALABAMA				
Bldg.	Coastal Pet. Corp.	Mobile	1	3,000	Own
			1	3,000	
	ARKANSAS				
Sd.	Houston Oil Co. of Texas	Camden	2	2,000	Dubbs
Sd.	Kettle Creek Refg. Co.	El Dorado	2	2,000	Do.
Op.	Lion Oil Refg. Co.	do.	10	3,500	Burton
Op.	do.	do.	1	2,500	Own
Sd.	Ouachita Valley Refg. Co.	do.	1	750	Dubbs
Sd.	Root Refg. Co.	do.	2	1,500	Do.
Op.	do.	do.	1	2,500	Winkler-Koch
Op.	Simms Oil Co.	Smackover	2	2,000	Cross
			21	16,750	
	CALIFORNIA[1/]				
Op.	Associated Oil Co.	Avon	1	10,000	Tube-and-tank
Op.	Hercules Gasoline Co.	Los Angeles	1	1,250	Jenkins
Sd.	Richfield Oil Co. of Calif.	Hynes	4	14,000	Cross
Op.	do.	Watson	12	16,000	Black
Op.	Rio Grande Oil Co.	Vinvale	2	2,000	Jenkins
Op.	Shell Oil Co.	Dominguez	8	34,000	Dubbs
Op.	do.	Martinez	8	15,200	Do.
Op.	do.	do.	1	4,800	Convertor
Op.	do.	Watson	8	18,000	Dubbs
Op.	Standard Oil Co. of Calif.	El Segundo	12	36,300	Do.
Op.	do.	Richmond	8	18,200	Do.
Op.	The Texas Co.	Fillmore	1	2,700	Cross
Op.	do.	Watson	3	5,600	Holmes-Manley
Op.	Union Oil Co. of Calif.	Wilmington	4	12,000	Cross
Op.	do.	do.	1	6,000	Lientz
Op.	do.	do.	1	3,000	Carborundum
Sd.	Vulcan Refg. Co.	Los Angeles	1	1,000	Vapor phase
Sd.	Western Oil & Refg. Co.	do.	2	4,200	Jenkins
			78	204,150	

1 Data compiled by E. T. Knudsen of the San Francisco Office of the U. S. Bureau of Mines.

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	COLORADO				
Op.	Continental Oil Co.	Denver	1	1,000	Cross
Op.	do.	Florence	7	959	Burton
Sd.	do.	do.	3	411	do.
Op.	The Texas Co.	Craig	1	1,500	Holmes-Manley
			12	3,870	
	GEORGIA				
Op.	The Atlantic Refg. Co.	Brunswick	2	3,600	Lewis
			2	3,600	
	ILLINOIS				
Op.	The Globe Oil & Refg. Co.	Lemont	1	3,000	Winkler-Koch
Op.	Indian Refg. Co.	Lawrenceville	8	8,000	Cross
Op.	Lincoln Oil Refg. Co.	Robinson	4	7,600	Holmes-Manley
Op.	Lubrite Refg. Corp.	E. St. Louis	2	2,500	Pratt
Op.	Shell Pet. Corp.	Wood River	11	9,200	Dubbs
Sd.	do.	do.	3	2,800	do.
Sd.	do.	do.	4	3,600	Cross
Op.	do.	do.	1	4,000	True vapor-phase
Sd.	Standard Oil Co. (Ind.)	do.	60	15,500	Burton
Op.	do.	do.	6	22,300	Holmes-Manley
Op.	The Texas Co.	Lockport	6	10,000	do.
Op.	do.	do.	1	2,000	de Florez
Op.	do.	do.	2	4,000	Pressure-coke
Op.	White Star Refg. Co.	Wood River	3	3,100	Dubbs
			112	97,600	
	INDIANA				
Op.	Bartles-Maguire Oil Co.	E. Chicago	2	2,000	Jenkins
Op.	do.	do.	1	1,150	Vapor-phase
Op.	Empire Oil & Refg. Co.	do.	10	15,000	Doherty
Op.	Shell Pet. Corp.	do.	8	13,000	Dubbs
Op.	Sinclair Refg. Co.	do.	10	13,000	Isom
Sd.	do.	do.	25	32,500	do.
Op.	do.	do.	8	22,500	Sinclair Type 600

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	INDIANA (Cont'd)				
S.d.	Standard Oil Co. (Ind.)	Whiting	40	8,000	Burton
Op.	do.	do.	22	61,000	Holmes-Manley
Op.	do.	do.	2	4,400	Continuous high-pressure
Bldg.	do.	do.	1	12,000	Combination
			129	184,550	
	IOWA				
S.d.	MonaMotor Oil Co.	E. Omaha	1	1,000	Cross
			1	1,000	
	KANSAS				
Op.	Altitude Pet. Corp.	Chanute	2	3,000	Jenkins
Op.	Barnsdall Refineries (Inc.)	Wichita	4	1,500	Dubbs
Op.	Derby Oil Co.	do.	2	1,500	do.
S.d.	do.	do.	2	1,000	do.
Op.	El Dorado Refg. Co.	El Dorado	1	2,000	Winkler-Koch
Op.	Golden Rule Refg. Co.	Wichita	1	1,200	Jenkins
S.d.	Hutchinson Oil Refg. Co.	Hutchinson	1	750	Trumble
Op.	Independent Oil & Gas Co.	Kansas City	1	2,500	Dubbs
S.d.	Kanotex Refg. Co.	Arkansas City	2	2,400	Jenkins
Op.	do.	do.	1	2,500	Donnelly
Op.	do.	do.	1	1,200	Jenkins
Op.	National Refg. Co.	Coffeyville	1	1,500	Own
Op.	Shell Pet. Corp.	Arkansas City	6	5,600	Dubbs
S.d.	do.	do.	2	1,400	do.
Bldg.	Sinclair Refg. Co.	Coffeyville	2	10,000	Sinclair Type 600
Op.	do.	do.	10	13,000	Isom
S.d.	do.	Argentine	10	13,000	do.
S.d.	Skelly Oil Co.	El Dorado	9	9,000	Jenkins
Op.	do.	do.	7	13,000	Pipe still
S.d.	do.	do.	2	2,500	Skelly-Rittman vapor-phase
Op.	The Standard Oil Co. (Kans.)	Neodesha	20	12,000	Burton
Op.	do.	do.	1	2,500	Holmes-Manley
Bldg.	do.	do.	1	2,500	do.
Op.	Vickers Pet. Co. of Del.	Potwin	2	1,500	Dubbs
Op.	White Eagle Oil Corp.	Augusta	4	15,000	Controlled coil
			95	122,050	

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	KENTUCKY				
Op.	Aetna Oil Service (Inc.)	Louisville	2	400	Fleming
Op.	Ashland Refg. Co.	Catlettsburg	1	1,000	Dubbs
Op.	Latonia Refg. Corp.	Latonia	2	4,800	Tube-and-tank
Op.	Louisville Refg. Co.(Inc.)	Louisville	2	1,800	Dubbs
Op.	The Texas Co.	Pryse	1	2,000	Holmes-Manley
			8	10,000	
	LOUISIANA				
Op.	Chalmette Pet. Corp.	Chalmette	1	3,000	Winkler-Koch
S.d.	Crystal Oil Refg. Corp.	Cedar Grove	2	3,400	Jenkins
Op.	Louisiana Oil Refg. Corp.	Bossier City	9	13,500	Tube-and-tank
Op.	Shell Pet. Corp.	Norco	4	7,800	Dubbs
S.d.	do.	do.	2	2,600	do.
Op.	Standard Oil Co. of La.	Baton Rouge	22	46,000	Link
Op.	do.	do.	8	10,000	Tube-and-tank
Op.	do.	do.	2	5,000	Cross
Op.	Stanolind Oil and Gas Co.	Superior	1	2,000	do.
			51	93,300	
	MARYLAND				
Op.	Continental Oil Co.	Baltimore	2	4,000	Cross
Op.	do.	do.	4	3,000	Dubbs
S.d.	Interocean Oil Co.	do.	2	1,000	do.
S.d.	do.	do.	4	2,000	Leamon
Op.	Standard Oil Co. of N.J.	do.	4	17,200	Tube-and-tank
S.d.	do.	do.	6	12,200	do.
			22	39,400	
	MASSACHUSETTS				
Op.	Braintree Oil Processing Co.	E. Braintree	2	4,500	Doherty
Op.	Cities Service Refg. Co.	do.	2	1,800	Holmes-Manley
Op.	Colonial Beacon Oil Co., (Inc.)	Everett	8	16,000	Tube-and-tank
S.d.	do.	do.	4	8,000	do.
			16	30,300	

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	MICHIGAN				
Op.	White Star Refg. Co.	Trenton	3	3,750	Dubbs
			3	3,750	
	MISSOURI				
S.d.	Joplin Refg. Co.	Joplin	1	1,000	Jenkins
Op.	Standard Oil Co. (Ind.)	Sugar Creek	10	3,500	Burton
S.d.	do.	do.	10	3,500	do.
Op.	do.	do.	5	12,000	Holmes-Manley
			26	20,000	
	MONTANA				
S.d.	Arro Oil & Refg. Co.	W. Lewistown	1	500	Dubbs
Op.	Hart Refineries	Missoula	1	300	Own
Op.	International Refg. Co.	Sunburst	1	2,500	de Florez
S.d.	Laurel Oil & Refg. Co.	Laurel	1	1,500	Donnelly
			4	4,800	
	NEW JERSEY				
Op.	The Bertrin Pet. Co.	Maurer	1	3,000	Cross
Op.	Eastern Oil Processing Co.	Petty Island	3	4,500	Doherty
Op.	Gulf Refg. Co.	Bayonne	1	1,000	de Florez
Op.	Standard Oil Co. of N.J.	Bayonne, etc.	22	64,400	Tube-and-tank
S.d.	do.	do.	8	15,200	do.
Op.	Tide Water Oil Co.	Bayonne	5	15,100	do.
Bldg.	do.	do.	2	7,040	do.
Op.	Vacuum Oil Co. (Inc.)	Paulsboro	3	3,500	Cross
Op.	do.	do.	3	1,800	Tube-and-tank
			48	115,540	
	NEW YORK				
Op.	Sinclair Refg. Co.	Wellsville	1	4,000	Sinclair Type 60
Op.	Standard Oil Co. of N.Y., (Inc.)	Brooklyn & L. I. City	6	8,000	Cross
Op.	do.	do.	1	2,000	de Florez
Op.	do.	Buffalo	2	2,000	Cross
Op.	do.	do.	1	2,000	de Florez
Op.	Vacuum Oil Co., Inc.	Olean	2	1,000	Cross
Op.	do.	do.	1	600	Tube-and-tank
			14	19,600	

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	OHIO				
Op.	Allegheny Arrow Oil Co.	Canton	1	750	Dubbs
Op.	Gulf Refg. Co. (Del.)	Hooven	2	9,000	Own
Op.	do.	Toledo	2	6,000	do.
Op.	National Refg. Co.	Marietta	1	1,000	do.
Op.	The Pure Oil Co.	Heath	2	4,000	Cross
Op.	do.	do.	4	3,000	Gyro
Op.	do.	Toledo	4	6,500	do.
Op.	The Standard Oil Co. (Ohio)	Lima	2	1,900	Cross
Op.	do.	do.	1	7,150	Solar
Op.	do.	Cleveland	4	9,500	Tube-and-tank
Op.	do.	Toledo	2	4,800	do.
Op.	Stellar Refg. Co.	Marne	1	500	Leamon
Op.	Sun Oil Co. 1/	Toledo	2	8,000	Own
			28	62,100	
	OKLAHOMA				
Op.	Anderson-Prichard Refg. Co.	Cyril	1	3,600	Winkler-Koch
Op.	Barnsdall Refineries, (Inc.)	Okmulgee	2	4,500	Cross
Op.	do.	Barnsdall	3	4,000	do.
Op.	Beckett Co. (Inc.)	Beckett	1	1,500	Jenkins
Op.	Bell Oil & Gas Co.	Grandfield	1	1,000	Dubbs
Op.	Bilmont Refg. Co.	Garber	1	1,000	Jenkins
Op.	Champlin Refg. Co.	Enid	1	3,000	Winkler-Koch
Op.	Continental Oil Co.	Ponca City	2	4,000	Cross
Op.	do.	do.	6	9,000	Dubbs
Op.	do.	Sapulpa	6	1,500	Cross
Op.	Deep Rock Oil Corp.	Cushing	1	4,000	Dubbs
Op.	Eason Oil Co.	Enid	2	2,000	Jenkins
S.d.	Empire Oil & Refg. Co.	Cushing	2	1,500	Doherty
Op.	do.	Okmulgee	1	1,000	do.
Op.	do.	Ponca City	3	2,500	do.
Op.	do.	do.	2	2,000	Dubbs
Bldg.	Garber Refinery (Inc.)	Garber	1	2,500	Winkler-Koch
S.d.	The Globe Oil & Refg. Co.	Blackwell	1	1,000	Cross
Op.	do.	do.	1	3,000	Winkler-Koch
S.d.	Imperial Refg. Co.	Ardmore	4	2,000	Dubbs
Op.	Independent Oil & Gas Co.	Okmulgee	1	2,500	do.
Op.	Johnson Oil Refg. Co.	Cleveland	4	2,000	do.
S.d.	Marathon Oil Co.	Boynton	6	900	Slagter

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	OKLAHOMA (Cont'd)				
S.d.	Marathon Oil Co.	Bristow	3	450	Slagter
Op.	Mid-Continent Pet. Corp. 1/	W. Tulsa	50	15,000	Own
Op.	Producers & Refiners Corp.	do.	3	2,500	Dubbs
Op.	The Pure Oil Co.	Ardmore	4	2,500	do.
Op.	do.	Muskogee	2	4,000	Cross
Op.	do.	do.	2	1,000	Gyro
Op.	Rock Island Refg. Co.	Duncan	2	3,000	Winkler-Koch
S.d.	Sinclair Refg. Co.	Sand Springs	4	4,000	Cross
Op.	The Texas Co.	W. Tulsa	9	15,000	Holmes-Manley
Op.	do.	do.	2	3,500	Pressure-coke
S.d.	Texas Pacific Coal & Oil Co.	Wynnewood	2	900	Dubbs
Op.	Tidal Refg. Co.	Drumright	2	5,000	Tube-and-tank
S.d.	do.	do.	5	2,500	Burton
Op.	White Oak Corp.	Allen	1	2,000	Jenkins
Op.	H. F. Wilcox Oil & Gas Co.	Bristow	1	1,100	Dubbs
			145	122,450	
	PENNSYLVANIA				
Op.	The Atlantic Refg. Co.	Franklin	6	6,000	Cross
Op.	do.	Philadelphia	10	20,000	do.
Op.	do.	Pittsburgh	2	4,000	do.
Op.	do.	Philadelphia	2	2,600	Lewis
Op.	do.	do.	4	10,000	de Florez
S.d.	Conewango Refg. Co.	Langdale	2	500	Snodgrass
S.d.	The Freedom Oil Works Co.	Coraopolis	1	500	Dubbs
Op.	Gulf Refg. Co.	Girard Point	7	19,000	Own
Op.	do.	Neville Island	1	3,000	do.
Op.	Kendall Refg. Co.	Bradford	3	2,400	Dubbs
S.d.	Penn. Oil Products Refg. Co.	Eldred	1	1,000	Snodgrass
Op.	The Pennzoil Co.	Rouseville & McClintock	3	4,500	Dubbs
Op.	The Pure Oil Co.	Marcus Hock	4	8,000	Cross
Op.	do.	do.	3	4,000	Gyro
Op.	Quaker State Oil Refg. Corp.	Emlenton	1	750	Dubbs
S.d.	Sinclair Refg. Co.	Marcus Hook	20	26,000	Isom
Op.	do.	do.	4	17,000	Sinclair Type 600

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	PENNSYLVANIA (Cont'd)				
Op.	Sun Oil Co. 1/	Marcus Hook	10	20,000	Own
S.d.	Ultra-Penn Refg. Co.	Bruin	4	1,200	Snodgrass
S.d.	Vapor Phase Oils (Inc.)	Conewango	4	1,000	Ormont
S.d.	Waverly Oil Works Co.	Pittsburgh	1	1,000	Cross
S.d.	do.	Coraopolis	1	1,500	do.
			94	153,950	
	RHODE ISLAND				
Op.	Standard Oil Co. of N.Y. (Inc.)	E. Providence	3	6,000	Cross
			3	6,000	
	SOUTH CAROLINA				
S.d.	Standard Oil Co. of N.J.	Charleston	8	14,400	Tube-and-tank
			8	14,400	
	TEXAS				
S.d.	American Refg. Properties	Wichita Falls	2	1,800	Dubbs
S.d.	do.	do.	1	1,000	Cross
S.d.	Atlantic-Pacific & Gulf Refg. Co.	do.	1	2,500	Jenkins
S.d.	Burford Oil Co.	Pecos	2	4,800	do.
Op.	Col-Tex Refg. Co.	Colorado	1	3,000	Richmond
Op.	Continental Oil Co.	Wichita Falls	2	2,000	Cross
Op.	Cosden Oil Co.	Big Spring	4	8,000	Jenkins
Op.	Crown Oil & Refg. Co.	Houston	3	7,500	Holmes-Manley
Op.	East Texas Refg. Co.	Longview	1	3,000	Own
Op.	Empire Oil & Refg. Co.	Gainesville	2	2,000	Dubbs
Op.	Gulf Refg. Co.	Fort Worth	1	6,000	Own
Op.	do.	Port Arthur	22	55,000	do.
Op.	do.	Sweetwater	2	4,000	do.
S.d.	Humble Oil & Refg. Co.	Baytown	2	15,000	Cross
Op.	do.	do.	15	117,000	Tube-and-tank
S.d.	do.	do.	5	38,000	do.
Op.	do.	Ingleside	2	25,000	do.
S.d.	do.	McCamey	2	25,000	do.

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	TEXAS (Cont'd)				
S.d.	Iowa Park Prod. & Refg. Co.	Iowa Park	1	1,250	Jenkins
S.d.	LaSalle Pet. Co.	Burkburnett	1	1,800	do.
Op.	Magnolia Pet. Co.	Beaumont	20	55,000	Cross
Op.	do.	Fort Worth	1	750	Controlled coil
Op.	do.	do.	1	3,000	Cross
Op.	do.	Luling	1	3,750	Controlled coil
Op.	Marathon Oil Co.	Fort Worth	6	900	Slagter
Op.	Misko Refineries (Inc.)	Mirando City	1	1,200	Own
S.d.	Motor Fuel Products Co.	Laredo	1	1,600	Jenkins
Op.	Olney Oil & Refg. Co.	Olney	1	1,000	Own
Op.	Oriental Oil Co.	Dallas	1	1,500	do.
Op.	Panhandle Refg. Co.	Wichita Falls	2	1,200	Dubbs
Op.	Pasotex Pet. Co.	El Paso	1	4,000	do.
S.d.	Petroleum Conversion Corp.	Texas City	1	600	True vapor-phase
Op.	Phillips Pet. Co.	Borger	6	7,500	Own
Op.	The Pure Oil Co.	Nederland	26	13,000	Cross
Op.	do.	do.	3	3,000	Gyro
Op.	Republic Oil Refg. Co.	Texas City	1	3,500	Winkler-Koch
S.d.	Richardson Refg. Co.	Big Spring	2	4,400	Jenkins
Op.	Shell Pet. Corp.	Houston	6	14,000	Dubbs
Bldg.	do.	do.	1	4,000	do.
Op.	Simms Oil Co.	W. Dallas	2	2,170	Cross
Op.	Sinclair Refg. Co.	Houston	7	27,000	Sinclair Type 600
S.d.	do.	do.	20	26,000	Isom
S.d.	do.	do.	3	6,500	Sinclair Type 60
S.d.	Star Refg. & Prod. Co.	Fort Worth	1	200	Fleming
S.d.	Stone Oil Co.	Texas City	1	2,000	Jenkins
Op.	Taxman Refg. Co.	Wichita Falls	1	1,500	Donnelly
Op.	Taylor Refg. Co.	Tyler	1	10,000	Rowsey
Op.	The Texas Co.	Amarillo	1	1,200	de Florez
Op.	do.	do.	1	2,000	Pressure-coke
Op.	do.	El Paso	1	1,500	Holmes-Manley
Op.	do.	Houston	1	1,000	Tube-and-tank
Op.	do.	Port Arthur	38	90,000	Holmes-Manley
Op.	do.	do.	1	2,000	de Florez
Op.	do.	do.	2	4,000	Pressure-coke
Op.	do.	San Antonio	2	3,000	Holmes-Manley
Op.	do.	W. Dallas	2	3,600	do.
Op.	do.	do.	1	2,000	de Florez
Op.	do.	do.	3	4,000	Pressure coke
Op.	Texas Pacific Coal & Oil Co.	Fort Worth	1	1,000	Cross
			244	638,220	

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Status	Company	Location	Number of units	Total daily charging capacity, barrels	Type of process
	UTAH				
Bldg.	Jenson Oil Refg. Co.	Ogden	1	1,000	Own
S.d.	Utah Oil Refg. Co.	N. Salt Lake City	30	3,800	Burton
Op.	do.	do.	2	6,400	Holmes-Manley
			33	11,200	
	WEST VIRGINIA				
Op.	Carbide & Carbon Chemicals Corp.	S. Charleston	1	800	Gyro
S.d.	do.	do.	1	800	do.
Op.	Ohio Valley Refg. Co.	St. Marys	1	750	Dubbs
Op.	The Pure Oil Co.	Cabin Creek Jct.	3	1,300	Gyro
Op.	Standard Oil Co. of N.J.	Parkersburg	1	2,800	Tube-and-tank
S.d.	do.	do.	2	3,200	do.
Op.	Tri-State Refg. Co.	Kenova	1	1,800	Jenkins
			10	11,450	
	WYOMING				
Op.	Continental Oil Co.	Glenrock	5	1,708	Burton
S.d.	do.	do.	10	2,016	do.
S.d.	Egaso Operating Co.	Osage	1	1,000	Cross
S.d.	Midwest Refg. Co.	Greybull	40	5,480	Burton
Op.	do.	Laramie	13	1,982	do.
S.d.	do.	do.	7	1,068	do.
Op.	Producers & Refiners Corp.	Parco	6	3,300	Dubbs
Op.	Standard Oil Co. (Ind.)	Casper	20	7,140	Burton
S.d.	do.	do.	30	10,710	do.
Bldg.	do.	do.	1	6,547	Continuous high-pressure
Op.	The Texas Co.	Casper	3	5,000	Holmes-Manley
Op.	do.	do.	1	1,500	Pressure-coke
S.d.	do.	Cody	1	1,500	Holmes-Manley
Op.	White Eagle Oil Corp.	Casper	1	3,000	Controlled coil
S.d.	do.	do.	1	2,000	do.
			140	53,951	

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